NASA JOHNSON SPACE CENTER ORAL HISTORY PROJECT
BIOGRAPHICAL DATA SHEET

NAME: Dr. Jeffrey Alan Hoffman

Oral History: 2 April 2009
3 and 12 November

EDUCATIONAL BACKGROUND:

B.A. in Astronomy, Amherst College, Amherst, Massachusetts (1966)
Ph.D. in Astrophysics, Harvard University, Boston, Massachusetts (1971)
M.S. in Materials Science, Rice University, Houston, Texas (1988)

PRE-NASA EXPERIENCE:

Leicester University in England (1972-1975)
- Postdoctoral Fellow

Massachusetts Institute of Technology, Cambridge, Massachusetts (1975-1978)
- Project Scientist at Center for Space Research

NASA EXPERIENCE:

NASA Lyndon B. Johnson Space Center, Houston, Texas (1978-1997)
- Astronaut, Astronaut Office, Flight Crew Operations Directorate

NASA European Representative, Paris, France (1997-2001)
- Representative

Post-NASA EXPERIENCE:

Massachusetts Institute of Technology, Cambridge, Massachusetts (2001-present)
- Professor in the Department of Aeronautics and Astronautics

MISSIONS:

STS-51D (*Discovery*)
- Crew: Commander Karol J. Bobko, Pilot Donald E. Williams, Mission Specialist 1 M. Rhea Seddon, Mission Specialist 2 Jeffery A. Hoffman, Mission Specialist 3 S. David Griggs, Payload Specialist 1 Charles D. Walker, Payload Specialist 2 Senator E. Jake Garn
- Launched: 12 April 1985 at 8:59:05 a.m. EST from Kennedy Space Center, Florida
- Duration: 6 days, 23 hours, 55 minutes, 23 seconds
- Landed: 19 April 1985 at 8:54:28 a.m. EST at Kennedy Space Center, Florida
- Mission Highlights: Two communication satellites TELESAT-I (ANIK C-1) and SYNCOM IV-3 (also known as LEASAT-3) deployed into space. During the deployment of SYNCOM IV-3, the spacecraft sequencer failed to initiate antenna deployment, spin-up and ignition of perigee kick motor. Thus, the crew extended the mission two additional days to make certain the sequencer start lever remained in

proper position. Hoffman and Griggs performed an unplanned spacewalk in order to attach "flyswatter" devices to a remote manipulator system on the satellite. Seddon engaged the LEASAT lever by utilizing a remote manipulator system, but the post-deployment sequence failed to begin. Other payloads involved Continuous Flow Electrophoresis System (CFES) III; two Shuttle Student Involvement Program (SSIP) experiments; American Flight Echocardiograph (AFE); two Get Away Specials; Phrase Partitioning Experiments (PPE); the crew conducted an astronomy verification test, medical experiments, played with "toys in space," an informal study of the behavior of simple toys in a weightless environment.

STS-35 (*Columbia*)

- Crew: Commander Vance D. Brand, Pilot Guy S. Gardner, Mission Specialist 1 Jeffrey A. Hoffman, Mission Specialist 2 John M. Lounge, Mission Specialist 3 Robert A. Parker, Payload Specialist 1 Samuel T. Durrance, Payload Specialist 2 Ronald A. Parise
- Launched: 2 December 1990 at 1:49:01 a.m. EST from Kennedy Space Center, Florida
- Duration: 8 days, 23 hours, 5 minutes, 8 seconds
- Landed: 10 December 1990 at 9:54:08 p.m. PST at Edwards Air Force Base, California
- Mission Highlights: The flight crew conducted observations of the celestial sphere in ultraviolet and X-ray astronomy with the ASTRO-1, an observatory consisting of four telescopes: Hopkins Ultraviolet Telescope (HUT); Wisconsin Ultraviolet Photo-Polarimeter Experiment (WUPPE); Ultraviolet Imaging Telescope (UIT); and Broad Band X-Ray Telescope (BBXRT). The flight crew operated the Ultraviolet telescopes in various shifts. During the mission, the flight crew lost both data display units used for pointing the telescopes and operating the experiments. Therefore, the ground teams at Marshall Space Flight Center had to aim the ultraviolet telescopes with assistance from the flight crew. However, the loss of data display did not affect BBXRT because ground-based operators at Goddard Space Flight Center directed it from the outset of the mission. Other experiments accomplished during the mission included Shuttle Amateur Radio Experiment-2 (SAREX-2), a ground-based experiment to calibrate electro-optical sensors at Air Force Maui Optical Site (AMOS) in Hawaii; and the flight crew conducted a live classroom lesson from space for two classes of 8^{th} and 9^{th} grade students (Space Classroom, Assignment: The Stars). Due to impending bad weather at primary landing site, Edwards Air Force Base, California, the flight crew cut the mission short by one day. Although the flight crew encountered difficulty in operating the telescopes, science teams at Marshall and Goddard noted that the flight crew achieved an estimated 70 percent of the planned data.

STS-46 (*Atlantis*)

- Crew: Commander Loren J. Shiver, Pilot Andrew M. Allen, Mission Specialist 1 Jeffrey A. Hoffman, Mission Specialist 2 Franklin R. Chang-Diaz, Mission Specialist 3 Claude Nicollier, Mission Specialist 4 Marsha S. Ivins, Payload Specialist 1 Franco Malerba
- Launched: 31 July 1992 at 9:56:48 a.m. EDT from Kennedy Space Center, Florida
- Duration: 7 days, 23 hours, 15 minutes, and 3 seconds
- Landed: 8 August 1992 at 9:11:50 a.m. EDT at Kennedy Space Center, Florida
- Mission Highlights: The flight crew deployed ESA's European Retrievable Carrier (EURECA), a free-flying science platform. The flight crew also deployed the joint NASA/Italian Space Agency Tethered Satellite System (TSS). Deployment of EURECA occurred a day later than scheduled due to a problem with its data handling system. Seven and half hours following deployment the flight crew fired the spacecraft's thrusters in an effort to boost EURECA to its planned operating altitude of around 310 miles. However, unexpected attitude data from the spacecraft caused the flight crew to cut the thruster firing to six minutes instead of the planned twenty-four minutes. The flight crew resolved the problem and was able to boost EURECA to its operational orbit on the mission's sixth day. In addition to the problems associated with EURECA, the flight crew also experienced delays in the deployment of the TSS. During the deployment, the TSS reached a maximum distance of only 860 feet instead of its planned 12.5 miles because of a jammed tether line. After numerous attempts to free the tether, the flight crew curtailed TSS operations and stowed the satellite for a return to Earth. Secondary payloads included Evaluation of Oxygen Integration with Materials/Thermal Management Processes (EOIM-III/TEMP 2A), Consortium for Materials Development in Space Complex Autonomous Payload (CONCAP II and CONCAP III), IMAX Cargo Bay Camera (ICBC), Limited Duration Space Environment Candidate Materials Exposure (LDCE), Air Force Maui Optical Site (AMOS), Pituitary Growth Hormone Cell Function (PHCF), and Ultraviolet Plume Instrument (UVPI). The mission was extended one day in order to complete scientific objectives.

STS-61 (*Endeavor*)

- Crew: Commander Richard O. Covey, Pilot Kenneth D. Bowersox, Payload Commander F. Story Musgrave, Mission Specialist 1 Kathryn C. Thorton, Mission Speicalist 2 Claude Nicoller, Mission Specialist 3 Jeffrey A. Hoffman, Mission Specialist 5 Thomas D. Akers
- Launched: 2 December 1993 at 4:27:00 a.m. EST from Kennedy Space Center, Florida
- Duration: 10 days, 19 hours, 58 minutes, 37 seconds
- Landed: 13 December 1993 at 12:25:37 a.m. EST at Kennedy Space Center, Florida
- Mission Highlights: The shuttle flight represented one of the most challenging and complex manned missions ever attempted. During the record five back-to-back space walks totaling 35 hours and 28 minutes, two teams of astronauts completed the first servicing mission of Hubble Space Telescope (HST). On day three of the flight, Nicollier used a remote manipulator arm to position Hubble upright in payload bay. On day four of the flight, the first EVA team of Musgrave and Hoffman performed

EVA # 1, replacing two Remote Sensing Units (RSUs). The only problem encountered by the astronauts occurred when Hoffman and Musgrave had difficulty closing compartment doors after replacing RSUs. The seven-hour, fifty-four minute space walk represented the second longest in U.S. history. During EVA # 2, the team of Thorton and Akers successfully accomplished installing new solar arrays. Furthermore, Hoffman and Musgrave replaced one of Hubble's five scientific instruments, Wide Field/Planetary Camera (WF/PC) during EVA # 3 on flight day six. EVA # 4 performed on flight day seven by Thornton and Akers. The two astronauts removed High-Speed Photometer, one of Hubble's scientific instruments, and replaced it with Corrective Optics Space Telescope Axial Replacement (COSTAR) unit. Thornton and Akers also installed a co-processor to enhance the memory and speed of Hubble's computer. The final EVA performed by Hoffman and Musgrave occurred on flight day eight. During the seven-hour and twenty-one minute long EVA # 5, Hoffman and Musgrave replaced Solar Array Drive Electronics (SADE) unit and installed Goddard High Resolution Spectrograph Redundancy (GHRS) kit. Flight day nine witnessed the redeployment of Hubble Space Telescope.

STS-75 (*Columbia*)

- Crew: Commander Andrew M. Allen, Pilot Scott J. Horowitz, Payload Commander Franklin R. Chang-Diaz, Mission Specialist Maurizio Cheli, Mission Specialist Jeffrey A. Hoffman, Mission Specialist Claude Nicollier, Payload Specialist Umberto Guidoni
- Launched: 22 February 1996 at 3:18:00.061 p.m. EST from Kennedy Space Center, Florida
- Duration: 15 days, 17 hours, 40 minutes, 21 seconds
- Landed: 9 March 1996 at 8:58:38 a.m. EST at Kennedy Space Center, Florida
- Mission Highlights: About four seconds after liftoff, Allen reported that his instruments showed that one of the shuttle's main engines operated at only 45 percent of its normal capacity. Flight controllers in Houston quickly responded that all of the engines were performing nominally. Over the next few days, the flight crew powered up and prepared the TSS-1R and U.S. Microgravity Payload-3 (USMP-3) payloads for science operations. However, the flight crew noted problems with a payload interface device known as "Smart Flex." The problem with the payload interface device caused the flight crew to delay the deployment of the TSS satellite in order to perform additional testing on the "Smart Flex." On Flight Day 4 deployment operations for the TSS satellite began. After the flight crew had deployed 19.7 km of the tether and it had almost reached full deployment, the tether broke. As result of bad weather conditions at the Kennedy Space Center, the mission was extended by one day.

AWARDS & CITATIONS:

- Amherst College Porter Prize in Astronomy, 1963
- Second Walker Prize in Mathematics, 1964
- John Summer Runnells Scholarship Prize, 1965
- Stanley V. and Charles B. Travis Prize and Woods Prize for Scholarship, 1966
- Woodrow Wilson Foundation Pre-Doctoral Fellowship, 1966-67
- National Science Foundation Pre-Doctoral Fellowship, 1966-71
- National Academy of Sciences Post-Doctoral Visiting Fellowship, 1971-72
- Harvard University Sheldon International Fellowship, 1972-1973
- NATO Post Doctoral Fellowship, 1973-1974
- NASA Space Flight Medals, 1985, 1991, 1992, 1994, and 1996
- NASA Exceptional Service Medals, 1988 and 1992
- V. M. Komarov and the Sergei P. Korolyyov Diplomas, 1991 and 1994
- National Aeronautic Association Collier Trophy, 1993
- Aviation Week and Space Technology Laurels for Achievements in Space, 1993
- American Astronautical Society Victor A. Prather Award, 1994
- Freedom Forum Free Spirit Award, 1994
- NASA Distinguished Service Medals, 1994 and 1997
- American Institute of Aeronautics and Astronautics Support System Award, 1995

SELECT PUBLICATIONS & PATENTS:

- Jeffrey A. Hoffman, An Astronaut's Diary: Jeffrey A. Hoffman (Montclair, NJ: Caliban Press, 1986).

REFERENCES:

Michael Cassutt, Who's Who in Space: The International Space Station Edition (New York: Macmillan Library Reference USA, 1999), 154.

Douglas B. Hawthorne, Men and Women of Space (San Diego: Univelt, 1992), 331-333.

Jeffrey A. Hoffman Biographical Data Sheet (September 2002), NASA Lyndon B. Johnson Space Center Homepage, Online, http://www.jsc.nasa.gov/Bios/htmlbios/hoffman.html (Last Updated n.d.; Accessed 21 May 2003).

"Hoffman Moves to Paris," Space News Roundup (NASA Lyndon B. Johnson Space Center) 18 July 1997, 7.

"Mission Summary, STS 51-D," NASA Spacelink Homepage, Online, http://spacelink.nasa.gov/NASA.Projects/Human.Exploration.and.Development.of.Space/Human.Space.Flight/Shuttle/Shuttle.Missions/Flight.016.STS-51-D/Mission.Summary (Last Updated n.d.; Accessed 23 May 2003).

"Mission Summary STS-35," NASA Spacelink Homepage Online, http://spacelink.nasa.gov/NASA.Projects/Human.Exploration.and.Development.of.Space/Human.Spac

e.Flight/Shuttle/Shuttle.Missions/Flight.038.STS-35/Mission.Highlights (Last Updated n.d.; Accessed 23 May 2003).

"STS 51-D," NASA Historical Archive for Manned Missions Homepage, Online, http://science.ksc.nasa.gov/shuttle/missions/51-d/mission-51-d.html (Last Updated 29 June 2001; Accessed 21 May 2003).

"STS-35," NASA Historical Archive for Manned Missions Homepage, Online, http://science.ksc.nasa.gov/shuttle /missions/sts-35/mission-sts-35.html (Last Updated 29 June 2001; Accessed 21 May 2003).

"STS-46," NASA Historical Archive for Manned Missions Homepage, Online, http://science.ksc.nasa.gov/shuttle/ missions/ sts-46/mission-sts-46.html (Last Updated 29 June 2001; Accessed 21 May 2003).

"STS-61," NASA Historical Archive for Manned Missions Homepage, Online, http://science.ksc.nasa.gov/ shuttle/missions/sts-61.html (Last Updated 29 June 2001; Accessed 21 May 2003).

"STS-75" NASA Historical Archive for Manned Missions Homepage, Online, http://science.ksc.nasa.gov/shuttle/ missions/sts-75/ mission-sts-75.html (Last Updated 29 June 2001; Accessed 21 May 2003).

BIOGRAPHICAL DATA SHEET CREATED: 11 JUNE 2003